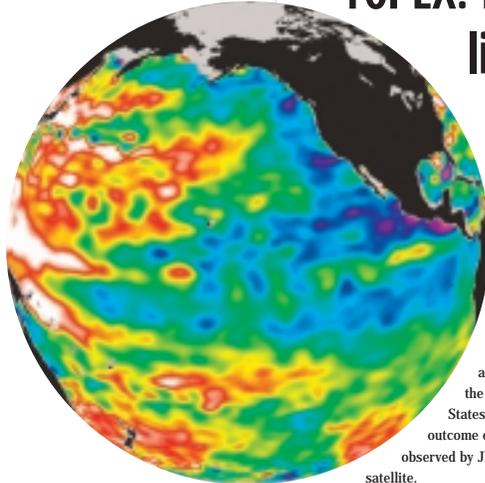


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TOPEX: La Niña likely to linger

By Diane Ainsworth



Blue and purple areas in the eastern Pacific Ocean indicate cooler than normal water. Higher than normal sea-surface heights have created the unusually warm temperatures in the western and mid-latitude Pacific (red and white areas).

a repeat of last year's mild La Niña conditions—with a stormy winter in the Pacific Northwest and a dry winter in the south-western United States—will be the likely outcome of sea-surface heights observed by JPL's TOPEX/Poseidon satellite.

TOPEX/Poseidon has detected lower than normal sea-surface heights in the eastern North Pacific and unusually high sea-surface heights in the western and mid-latitude Pacific. The height of the sea surface over a given area is an indicator of ocean temperature and other factors that influence climate.

Conditions are ripe for a stormy, wet winter in the Pacific Northwest and a dry, relatively rainless winter

in Southern California and the Southwest, the data show. "Clearly, these unusual conditions, which have persisted for 2 1/2 years, will not be returning to normal any time soon," said JPL oceanographer Dr. William Patzert. "This climate imbalance is big and we're definitely going through a decade of wild climatic behavior. But when we look back at the climate record over the past century, we've seen behavior like this before."

The latest measurements, taken during a 10-day data cycle Oct. 5-15, are available online at <http://www.jpl.nasa.gov/elnino>. Sea-surface height reveals cooler water measuring about 14 centimeters (6 inches) lower in the eastern North Pacific, from the Gulf of Alaska to central Alaska, and along the equator. The cooling trend sets the stage for another La Niña this winter.

A mirror image of that oceanic profile prevails in the western and mid-latitude Pacific Ocean, where higher than normal sea-surface heights are currently about 20 centimeters or 8 inches. Unusually warm temperatures have persisted and topped last year's temperatures, Patzert said.

"These unbalanced conditions will undoubtedly exert a very strong influence on climate over North America this fall and winter," Patzert said.

"Our profile of high sea-surface heights and warm temperatures in the western Pacific contrasts with low sea-surface heights and cool conditions in the eastern and equatorial Pacific. Those conditions will have a powerful impact on the weather system delivering jet streams out of the North Pacific," he added.

Hector Mine jolt may change timing of future quakes

By Diane Ainsworth

The 7.1 Hector Mine earthquake, which tore apart the Lavic Lake fault near Twenty-nine Palms on Oct. 16, may have changed the timing of future quakes in the area, said JPL scientists.

Locations closest to the epicenter near the small desert town of Ludlow moved as much as 5 meters (17 feet) below the surface, according to models based on measurements from JPL's Global Positioning System array of ground receivers, which are part of the Southern California Integrated Global Positioning System Network, said JPL scientist Dr. Jay Parker.

Additional measurements of the Lavic Lake fault line, analyzed by JPL's Dr. Michael Heflin, indicated that the ground slid about 18 centimeters (7 inches) north and 6 centimeters (2.5 inches) east at Landers Elementary School, site of the Global Positioning System ground receiver closest to the quake's epicenter.

"This quake loaded some fault segments with additional stress, while decreasing the amount of stress on other fault segments," said JPL's Dr. Kenneth Hurst, a geophysicist working with Parker and Heflin. "As a result, some faults may experience a quake sooner than they would have otherwise and other quakes may now be delayed."

JPL's analysis team, which is part of the Southern California Integrated Global Positioning System Network, will analyze data from sites in the vicinity of the epicenter to determine how the ground responds in the weeks ahead. Global Positioning System data from the constellation of 27 satellites will allow them to make daily measurements of ground movement to within 1/2-centimeter (0.2 inches) accuracy.

"Our ground receivers will be able to pinpoint vertical and horizontal movements from the adjustments to the new stress field, which we expect will occur over the next several months to years," said Hurst. "Understanding these adjustments will be central to being able to understand the earthquake cycle."

Photographs of the surface rupture are available at <http://www-socal.wr.usgs.gov/hector/photos.html>. A map of the motion of the Global Positioning System stations is also available at <http://milhouse.jpl.nasa.gov>.

Closest-ever Io picture reveals new lava flows

By Jane Platt

Features as small as 9 meters (30 feet) can be discerned in the highest-resolution image ever of Jupiter's volcanic moon Io, taken by Galileo from an altitude of 617 kilometers (417 miles). It shows an area about 7.2 kilometers (4.5 miles) long and 2.2 kilometers (1.4 miles) wide. A complex mix of smooth and rough areas can be seen with clusters of pits and domes, many of which are the size of houses.

The closest-ever image of Jupiter's moon Io, taken during Galileo's daring flyby of the volcanic moon on Oct. 10, shows a lava field near the center of an erupting volcano.

The image was taken from an altitude of 671 kilometers (417 miles) and is 50 times better than the previous best, taken by the Voyager spacecraft in 1979.

Visible in the image are new lava flows from the volcanic center named Pillan, an area with erupting lava hotter than any known eruption that occurred on Earth within billions of years. Scientists will be studying this image to determine the characteristics of the eruption, along with other data due to be sent back by Galileo in coming weeks.

Not surprisingly, fierce radiation took its toll on the spacecraft. Io's orbit lies in a region of intense radiation from Jupiter's radiation belts, which can affect the performance of or even knock out various spacecraft instruments. A mere fraction of the dose that Galileo received would be fatal to a human. Because of the radiation risk, the Io encounters were scheduled for the end of the two-year extended mission, after Galileo had already fulfilled its other mission objectives.

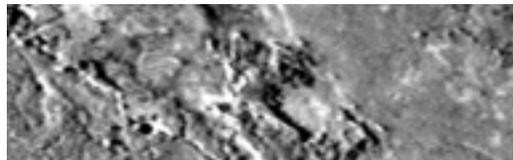
Most of the Io images were taken using a "fast camera" mode, where the camera itself pre-processes the

image to average the brightness in adjacent parts of the picture.

Galileo engineers say it appears that Jupiter's radiation caused the process to get out of sync, which degraded the quality of the images. Fortunately, images that were taken in other camera modes, including the newly released image, apparently did not suffer ill effects from the radiation.

"When we're flying the spacecraft through this high-radiation zone near Io's orbit, we have to plan for the likely radiation and figure out how to deal with it," said Galileo Project Manager Jim Erickson. "We used several different modes to see how each would work. Now that we

measure different wavelengths of light as they are reflected onto a sensor. This enables the instrument to produce a spectrum of the light from objects it observes. During the flyby, the grating did not move as it should have, meaning only one set of wavelengths was measured instead of the complete spectrum. The resulting data provides maps at each of several wavelengths in very high spatial resolution. These maps can be used to show the distribution of materials on the surface and measure the temperature of the lava in Io's volcanoes, but detailed spectral information for identifying mate-



know this particular camera mode didn't work well amidst the radiation, we'll use other modes from our six different types for the next Io flyby."

That second Io flyby is scheduled for Nov. 25 at an altitude of only 186 miles (300 kilometers).

During the Oct. 10 Io flyby, the radiation also apparently triggered a problem with Galileo's near-infrared mapping spectrometer. The instrument has a grating that allows it to

materials on the surface will be limited to the early part of the encounter when full spectral data were acquired.

The Galileo flight team is still evaluating the status of another instrument, the ultraviolet spectrometer, which has been acting up for two months. Since this instrument was not scheduled to be used during the Io encounter, it was switched off while engineers diagnose its grating problem.

News Briefs



Dr. Timothy Liu

The NASA review board investigating the loss of Mars Climate Orbiter has completed its first round of meetings, and has begun preparing a report on its initial findings.

"Mission team members from JPL and Lockheed Martin have responded fully to all of our requests for information," said board chairman ART STEPHENSON, director of NASA's Marshall Space Flight Center, Huntsville, Ala. "We clearly will have some specific recommendations relevant to helping ensure the successful landing of Mars Polar Lander, and we have already begun providing informal feedback to the lander team, given their tight schedule. We have also made good progress towards identifying the root causes of the orbiter mission failure."

The review board will brief officials at NASA Headquarters on its initial findings on Oct. 29. The board will then deliver an initial written report to NASA by Nov. 5. A second report due by Feb. 1, 2000, will address lessons learned and recommendations to improve NASA processes to reduce the probability of similar incidents in the future.

DR. TIMOTHY LIU, project scientist on JPL's SeaWinds ocean winds-observing mission, has been named a fellow of the American Meteorological Society.

Liu, a specialist in ocean and atmospheric interactions, has been a senior research scientist at JPL since 1993. He also leads JPL's air-sea interaction and climate team, made up of meteorologists and oceanographers.

He was a principal investigator from 1992-97 on the NASA Scatterometer mission, and serves as a principal investigator on the joint U.S.-French TOPEX/Poseidon ocean topography mission. He also works on the NASA Earth-Observing System series of missions and on the NASA Goddard Space Flight Center's Tropical Rain Measurement Mission.

A 24-inch Mount Wilson Observatory telescope used by JPL's Telescopes in Education Program has been named in memory of the late DR. TERRY COLE, former chief technologist for JPL.

GIL CLARK, manager of Telescopes in Education, made the dedication during a memorial at Caltech's Athenaeum Oct. 22.

Cole, who worked at JPL from 1980-98, died of prostate cancer Aug. 20. He also served as senior faculty associate in chemistry and chemical engineering at Caltech.

Clark credited Cole with support in the development of Telescopes in Education, which has been in operation for 6 1/2 years, and has allowed thousands of students across the United States and elsewhere to remotely control the telescope and its charge-coupled device camera in a real time to observe galaxies, nebulae, stars, and other projects and experiments.

Five members of the Radiation Testing Group in the Electronic Parts Engi-

neering Office 514 are coauthors of a paper that received honors at last summer's Nuclear and Space Radiation Effects Conference, sponsored by the Institute of Electrical and Electronic Engineers.

The paper, titled "Angular and Energy Dependence of Proton Upset in Optocouplers," was authored by ALLAN JOHNSTON, TETSUO MIYAHARA, GARY SWIFT, STEVE GUERTIN and LARRY EDMONDS. It was selected as the outstanding paper among 145 presented at the event, the major international conference on space radiation effects.

High-energy protons can cause small transient currents in photodetectors, and proton upset effects in optocouplers can be important in space. Upsets in optocouplers were observed on the Hubble Space Telescope after upgraded electronics were installed during the servicing mission in 1997. Similar optocouplers are used in many JPL spacecraft. The JPL team investigated proton upset over a wide range of energies and angles, and found that the angular dependence began to increase at smaller angles when protons with lower energy were used.

The Encyclopedia of Planetary Sciences, co-edited by JAMES SHIRLEY of Galileo's Near-Infrared Mapping Spectrometer's science team, has received a best reference work award from the Geoscience Information Society.

Shirley and co-editor RHODES FAIRBRIDGE of Goddard Space Flight Center received the Mary B. Ansari award at society's annual meeting Oct. 26. The award includes a \$500 prize. The society is an international professional organization created to improve the exchange of information in the Earth sciences.

The deadline for employees to enroll for benefits for 2000 is Monday, Nov. 1. Benefit changes can be made online through the Oracle Web Applications site (<http://nbs-web01.jpl.nasa.gov>), the same system used for timekeeping. For information, call the Benefits Office at ext. 4-3760.

JPL's Security and Protective Services Section reminds all personnel that identification badges are required to be worn in plain view at all times.

Security representatives will be visiting various work locations in the next few weeks to reinforce this requirement and measure compliance.

JPL personnel are invited to join the Caltech Hockey Club. Intermediate players and above are sought to compete in the full-contact sport.

Games are underway in the eight-team Pacific Coast Hockey Association, whose season continues through March. Practices are generally held Wednesday evenings at the Pasadena Ice Skating Center; times and locations of games vary.

For information, call HAFEN MCCORMICK at ext. 4-1608.

Almost 20 hours after starting, Carter, the event's oldest rider, was one of only 18 to finish the route, which included an elevation gain of more than 15,000 feet.

How did he prepare for such a feat? "I learned to not wait until I got thirsty to drink water," he said. "I drank eight ounces of water every five minutes to keep me going."

The event also supported a good cause. Riders were required to raise at least \$250 to benefit Summit Adventure, a non-profit wilderness program. Carter's JPL co-workers and others chipped in to the tune of \$720.

Carter isn't ready to hang up his wheels just yet. He plans to ride in the same event next year, although, he said, rather than the mountain bike he used this time, "I'd like to have a good road bike that'll support me much better."

Special Events Calendar

Ongoing

Alcoholics Anonymous—Meeting at 11:30 a.m. Mondays, Tuesdays, Thursdays (women only) and Fridays. Call Occupational Health Services at ext. 4-3319.

Cocodependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays of the month at noon in Building 111-117. Call employee assistance counselor Cynthia Cooper at ext. 4-3680 or Randy Herrera at ext. 4-0664.

Parent Support Group—Meets the fourth Tuesday of the month at noon. For location, call Jayne Dutra at ext. 4-6948.

Senior Caregivers Support Group—Meets the second and fourth Wednesdays of the month at 6:30 p.m. at the Senior Care Network, 837 S. Fair Oaks Ave., Pasadena, conference room #1. Call (626) 397-3110.

Friday, October 29

JPL Dance Club—Meeting at noon in Building 300-217.

JPL Perl Users Group—Meeting at noon in Building 301-127.

"Russia: Remembered and Revisited"—This travel film will be presented at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$9 and \$7. Call (626) 395-4652.

Sunday, October 31

"The Culture of Fear: Why Americans Are Afraid of the Wrong Things"—USC sociology professor Dr. Barry Glassner will speak at 2 p.m. in Caltech's Baxter Lecture Hall. Donation: \$5 at the door. Call (626) 395-4652.

Monday, November 1

Caltech Ballroom Dance Club—Beginning east coast swing will be held from 7:30 to 9 p.m. in Caltech's Winnett Lounge. \$1 per lesson. See www.caltech.edu/~ballroom or call (626) 791-3103.

Tuesday, November 2

Fidelity Investments—Building 180-101 will host "Are You Ready to Retire?" at 10 a.m. and "Turning Your Savings Into Income" at 2 p.m.

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-169.

Wednesday, November 3

Associated Retirees of JPL/Caltech Board—Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Caltech Ballroom Dance Club—Beginning salsa will be held from 7:30 to 9 p.m. in Caltech's Winnett Lounge. Cost: \$30. See www.caltech.edu/~ballroom or call (626) 791-3103.

JPL Drama Club—Meeting at noon in Building 301-127.

"Of Bulls, Bears and Crystal Balls"—Caltech finance professor Dr. Peter Bossaerts will discuss what mathematical theory can tell investors about financial markets. At 8 p.m. in Beckman Auditorium. Free admission. Call (626) 395-4652.

Thursday, November 4

JPL Gun Club—Meeting at noon in Building 183-328.

Friday, November 5

Caltech Women's Club—A welcoming coffee will be held from 4:30 to 6:30 p.m. at the Caltech Athenaeum Rathskeller. Call Sandy O'Rourke at (626) 335-5835 or Missy Jennings at (626) 799-4799.

JPL Dance Club—Meeting at noon in Building 300-217.

Fri., Nov. 5-Sun., Nov. 7

"Hedda Gabler"—The Ibsen play will be presented by Theater Arts at Caltech Friday and Saturday at 7:30 p.m., Sunday at 3 p.m. at Dabney Lounge. Admission is to be determined. Call (626) 395-4652.

Saturday, November 6

Turtle Island String Quartet—This ensemble, which combines influences of jazz, bluegrass, rock and R&B, will perform at 8 p.m. in Caltech's Beckman Auditorium. Tickets are \$25, \$21 and \$17. Call (626) 395-4652.

Wednesday, November 10

"The HGS-1 Lunar Rescue Mission"—Mark Skidmore and Jerry Salvatore of Hughes Global Services will describe how their team completed an unprecedented mission using the moon's gravity to position a stranded communications satellite into orbit around Earth. Presented by the Caltech Management Association at 4:45 in von Kármán Auditorium. Call Michael Eastwood at ext. 4-9273 or e-mail CMA. Announce@jpl.nasa.gov.

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Drama Club—Meeting at noon in Building 301-127.

JPL Toastmasters Club—Meeting at 5:30 p.m. in the Building 167 conference room. Guests welcome. Call Mary Sue O'Brien at ext. 4-5090.

Safeguarding Sensitive Information—Tom Wolfe of Section 366, Steve Wells of Section 665 and Jeff Norris of Section 345 will discuss Public Key Infrastructure, which provides confidentiality of sensitive information and authentication of authorized users, and is scheduled to be available at JPL in early 2000. At noon in von Kármán Auditorium.

SESPD Lecture—Deep Space 2 Project Manager Sarah Gavit will speak at 11 a.m. in the Building 167 conference room.

Thursday, November 11

JPL Astronomy Club—Meeting at noon in Building 198-102.

Friday, November 12

JPL Dance Club—Meeting at noon in Building 300-217.

JPL Perl Users Group—Meeting at noon in Building 301-127.

JPL Stamp Club—Meeting at noon in Building 183-328.

Fri., Nov. 12-Sun., Nov. 14

"Hedda Gabler"—The Ibsen play will be presented by Theater Arts at Caltech Friday and Saturday at 7:30 p.m., Sunday at 3 p.m. at Dabney Lounge. Admission is to be determined. Call (626) 395-4652.

Cyclist completes grueling ride



Photo courtesy James Kelley

After riding 136 miles and gaining more than 15,000 feet in elevation, JPL's Jim Carter completes the Mt. Whitney Classic benefit bike ride.

Six years ago, Jim Carter, a Cassini operations engineer, took up bike riding in the local foothills as a hobby. He hadn't mounted a bike since 11th grade, but arthritis in his knees prevented him from hiking, his preferred form of exercise, and a friend convinced him to try pedaling instead.

Carter, now 68, has parlayed that hobby into surviving a hot, grueling riding competition, the Mt. Whitney Classic benefit ride held in late September.

He and 32 others started at Badwater in Death Valley, about 280 feet below sea level, where the temperature was 107 degrees F at 3 p.m. They rode 136 miles straight through to Whitney Portal on Mt. Whitney, at 8,365 feet.



With the October 16 Hector Mine earthquake fresh in our memories, Universe discussed JPL's plans to respond to earthquakes and other emergencies with Emergency Preparedness Administrator Eric Fuller.

READY FOR THE BIG ONE

By Mark Whalen

Q How well is JPL prepared to deal with a major earthquake, particularly if one should strike during normal working hours? What would happen if the quake were so strong that people couldn't safely leave the Laboratory right away?

A We are better prepared than ever before to respond to an emergency. We have enough food and medical supplies on Lab to last everyone about three days. In addition, we have three water tanks up on the mesa, which hold a total of 2.5 million gallons of drinking water.

Our plan to deal with earthquakes is part of JPL's overall multihazard emergency response plan, which includes our response to a number of disasters and threats.

Q How was the plan developed?

A First we did a risk assessment, by asking what could go wrong, as well as a threat analysis or vulnerability study. This allowed us to prepare not only for earthquakes, but also for things like smog alerts, fires, hazardous materials threats, explosions, civil disturbances and bomb threats.

I believe we're in pretty good shape to deal with emergencies, because our response teams are well trained and always on call.

Q How do the rescue teams work?

A Our Urban Search and Rescue Team at JPL includes 50 trained emergency responders—35 volunteers from throughout the Lab, as well as the JPL fire department and guard force. All are specifically trained in collapsed structures and evacuations. This team trains every week and is on call even during non-working hours.

In addition, JPL does joint rescue operations training with 14 local fire, police and other emergency agencies, who would help us if we needed it. We would also help them if they needed us.

Q Are there others who would help employees in an emergency?

A Yes. A vital part of our rescue efforts are the approximately 550 building and floor wardens on Lab, who are trained in evacuation techniques in case of earthquake or other emergencies. The wardens also provide valuable information for rescuers if they tell can us the condition of a building, or if there are still people inside who can't evacuate.

Sometimes there are many wardens on one floor of a particular building. Building 301, for example, has four wardens on each floor.

Q Are the wardens trained in CPR or other medical techniques?

A Yes. After taking the emergency preparedness class I teach, they take CPR and first aid training from the JPL fire department.

Q In the event of a less severe earthquake, how do the emergency plans help keep the Lab up and running? How is building safety assured?

A We have 35 emergency generators on Lab to provide building power, so computers and other equipment can still work for critical operations.

Part of our team effort includes facilities staff, such as carpenters, plumbers and grounds crew, as well as maintenance engineers and structural engineers who can determine if buildings are safe for occupation.

Q The new emergency services Building 310 just opened a few months ago. How will some of its features help the Lab cope with emergency situations?

A First of all, the building was built to withstand a magnitude 7.4 earthquake. It's battery- and generator-powered. It also houses an emergency operations center, which is where we'll manage our response to a huge disaster and decide where and how we should best deploy our resources. For example, if we had a major earthquake here, with several damaged buildings and many injured people, we would start a triage, which sets our priorities to do the most important things first. We would gather commanders for logistics, guards and the fire department.

Q What other features will be part of the new building?

A By the end of the year, we expect to have in operation our new dispatch console. It will replace the current 3-3333 emergency extension used on Lab with a 911 emergency number.

It will be a state-of-the-art system, licensed by the state and county. The system will identify the phone number, building, floor and office number of callers, and will print a map at our fire station to aid the speed of rescues. Also, if a caller identifies a specific medical condition, the system will provide the 911 dispatcher with information on how that caller can help the victim until emergency help arrives.

For backup, we'll have a direct line to Crescenta Valley Sheriff's station, which is the local 911 center for this area.

We will also soon have in place a new computer-aided radio dispatch system. To manage disasters in the emergency operations center, we will be able to monitor in real time all video screens, alarms and 911 calls on five screens available to an operator.

Q Is anything being done to help avoid major damage to buildings?

A Yes. We completed seismic upgrades to buildings from 1975-82. Currently, also through a NASA-sponsored program, we have an earthquake monitoring system in nine buildings on Lab. Accelerometers have been

placed at the top, middle and bottom of buildings 144, 150, 179, 180, 230, 248, 264, 277 and 302 to find out differences in buildings' seismic activities during a quake. There are also sensors on the mesa.

The system was just recently installed, and the first data we've gotten is from the Hector Mine earthquake. It's being analyzed now.

This information will not only show us how the buildings shook in the quake, but will also aid structural analysis in the design of new buildings.

Q What other factors are involved in JPL's emergency planning?

A JPL's Management Operations Committee will be able to monitor our rescue operations at their own computers. The committee would determine legal issues, such as granting permission to send employees home in an emergency, how they will get paid, etc., as well as financial decisions to approve emergency spending we might need to do.

To help with off-Lab operations, we have ham radios to talk to other centers or Goldstone in case there are breakdowns in telephone communications, as well as an intercom between Madrid and Canberra so the Deep Space Network stations can communicate in real time.



Bob Brown/JPL Photo

Q How can JPL staff find out more about the multihazard emergency response plan?

A The document is available on the IE Navigator at <http://dmie>. There is also an emergency procedures home page at <http://jpl-facilities.jpl.nasa.gov/665/Emrgcy.htm>. Employees should also know about our 24-hour state-of-the-Lab number—(800) 303-4575—which they can call from home to see if JPL is open for business during an emergency.

Q With all your planning, do you feel the Lab is prepared for anything, and will never be caught by surprise?

A You're always surprised. The interesting thing about disasters is they never follow the book. You've got to be able to change your tactics in response to the situation, and that's what we train for.

Photo above left: Eric Fuller,

JPL's emergency preparedness administrator, leads JPL's Urban Search and Rescue Team in disaster training exercises. Below: Rescue workers from local agencies use heavy equipment to break up concrete as part of training exercise on Lab.

Letters

Thank you to everyone for your warm and sincere thoughts. Flowers and good wishes following my surgery.

Gregg Hanchett

I would like to take this opportunity to express my gratitude to all my friends who provided me with immense support to help me cope with the sad passing away of my father. I am overwhelmed with your kindness during this difficult time. My special thanks to ERC for the sweet gesture of sending me a beautiful plant.

Manju M. Kapoor

I am very grateful to the ERC and to my thoughtful friends and co-workers at JPL for the plant I received on the death of my mother. It meant a great deal to me at a difficult time. Thank you. Sincerely,

Rich Terrie

A sincere thank you to all the friends and colleagues of my husband at JPL for their outpouring of sympathy to my family and myself at this sad time. We are very grateful to all who donated blood in Wally's name during his illness. Sincerely,

Ginny Castellana

I would like to thank all of my JPL and OAO colleagues for the sympathy wishes on my father's passing away. Also, special thanks to the ERC for the lovely plant.

Myrna Snirowsky

Passings

SAM SEAKING, 77, retired printed circuit technician from Section 357, died of complications due to diabetes Sept. 5.

Seaking worked at JPL from 1953-68. He is survived by his wife, Laurine, daughters Sharon and Michele, son Peter and five grand-children.

Services were held Sept. 9 at Rose Hills Cemetery, Whittier.

PRAMOD SHARMA, 52, a senior member of the engineering staff in the Advanced Materials and Fluid Processes Technology Group, Section 354, died of a massive stroke Oct. 2. Sharma had worked at the Lab since 1989. He is survived by his wife, Dheera, daughter Anvita and son Saurabh.

Services were held Oct. 6 at Mountain View Cemetery in Altadena.

Retirees

The following employees retired in October: Richard Goldstein, 40 years, Section 330; Rex Quinn, 38 years, Section 333; Allen Heater, 34 years, Section 330; Willis Goss, 33 years, Section 302; Barbara Anderson, 27 years, Section 311; Jack Wooddell, 27 years, Section 344; Robert Robinson, 21 years, Section 344; Sadr Mohsenin, 20 years, Section 644; Dave Fabruada, 17 years, Section 661; Patricia Warner, 16 years, Section 642; Clifford Anderson, 13 years, Section 311.

Classifieds

For Sale

BABY ITEMS, cradle, include, sheet & matt., \$40; exercisuer \$35; infant car seat, smugl, asstd. infant clothes, blankets, shoes, all in gd. cond. and reasonably priced. 626/796-6248.

BABY ITEMS, crib w/mattress, pad, sheets, bumper pads, etc., \$60; extra bumper pad sets, \$5/ea; portable crib, folds for travel, \$30; girl's baby clothes sz. 3 mo.-2 yrs. (3 lg. bags full), \$30. 249-3677.

BABY/TODDLER ITEMS, Safety First booster seats for the table, 2, \$5/ea; side-by-side stroller (collapsible, reclines, removable sun shade), gd. cond., \$60. 626/355-9733.

BAR STOOLS, 2, solid maple w/maroon seats, \$50/each, 952-7434.

BASEBALL/FOOTBALL CARDS, '97-'98 Dodgers set, (Piazza, Mondes), \$5/ea; 200 ass'd. cards, inserts, favorite teams/players included, major stars, rookies, \$20; Randy Moss autographed 8 x 10 w/certif. of auth., \$20. 626/914-6083.

BEDROOM SET, child's, knotty pine, single bed w/rundle & 2 Sealy Posturpedic matt., nightstand, student desk, 4-drawer dresser/hutch, 4-drawer nightstand/dresser, exc. cond., \$385. 249-6786.

BICYCLE, Bianchi "Limited" racing/road, lg. frame, Shimano 600 eq'p'd, silver w/Bianchi-green accents, not ridden for several yrs., exc. cond., needs tires, \$450. 248-6721, John.

BICYCLE, girl's, 24", \$50. 661/298-5404.

COMPUTER, Dell, 486, 15" VGA monitor, Okidata printer, \$300/obo. 362-3358.

FIREWOOD, eucalyptus w/some pine, p'w in La Canada, \$230/cord, 790-6851, Roger or Margaret.

FISH TANK, 15/20 gal., w/light hood, \$220/obo. 362-3358.

FURNITURE, d'r, Ethan Allen cherry wood server, Georgian Court Collection, 40" x 21" x 34", exc. cond., \$800; matching wall-mounted shelf, \$40. 626/577-8107.

FUTON, solid maple, light color finish, like new, \$100. 952-7434.

GUITAR, Guild, 150 D Savoy elec. archtop, custom order, gold parts & X700 pickups, sunburst, new w/hard case, \$1,395. 249-2357.

GUITARS: '66 Fender Super Reverb, black face, no mods, grill cloth & speakers not orig., gone thru, new tubes, filter caps, grt. tone, \$975; '55 Fender P bass, blond, bakelite pickguard, contour body, \$3,750; '61 Gibson Les Paul/SG, cherry red, grt. cond., grt. tone, \$3,300; '57 Fender Telecaster, neck, w/ash, body paint & pickups orig., \$3,500/obo. 66 Gibson ES-335, cherry red, trapeze bridge, all orig. w/orig. lse, \$1,850. 626/798-7339.

HAMSTER PENS, 2, colorful plastic, major brands, incl. tower, w/wood, comb. tubes, attached feeding & water dishes, gd. cond., orig. \$250+ for all parts, sacrific. to gd. home, JPL disc, 909/981-7492, Jim.

JACKET, new, black leather, western style, med. sz., \$150. 626/798-6248.

KEYBOARD, Kawai, \$90. 661/298-5404.

KEYBOARD, Yamaha, electronic, synthesizer, 5 octave, mint cond., \$125. 952-7434.

MISC. equi/p., racks, 19", apx. 2ft x 2ft x 2ft, gd. phys. cond., poor paint, \$20/ea; 4 foreman's bags, mint top metal desk, standing height, 1-drawer, several shelves, \$50. 326-5233.

MISC. newspapers, Stars 'N Stripes armed forces, apx. 50 from WWI era, \$5/ea; phonograph, circa 1919, w/med. crank w/records, \$550; sign, Olympia beer, light-up, circa '70s, shows brewery & waterfall, bubble tube & starter, \$35; lg. mounted buffalo skull, suede backboard, \$145. 248-5282.

MISC. steam iron, GE Power Sprax, w/ cond., \$18; floor lamp, black base & pole, off-white shade, gd. cond., \$15; table-top TV antenna, RCA, w/ cond., \$10. 626/577-8107.

MEMO card, \$3.30; bags for laptop, used twice; 2 mo.-old 19" Phillips Mag color TV w/many extras, was \$195, sell \$145; 2 meg Videocard w/TV in/out, \$15; new Zip disks, \$10. MS Publisher '97, \$29; Macalife Anti-Virus Security Suite, free updates, \$19, orig. \$79; Compton Encyclopedia, \$5; Bruderbund Bible CD, \$10, orig. \$59; Greeting Card Creator, \$5; Premier Edition Draw Print Studio, \$15. 909/981-7492.

Jeopardy, \$9; Yellow Page USA, 14 million listings, \$4; Photo Studio SE, \$7; You Don't Know Jack CDs, \$15. 366-6134.

MOVING SALE: calculator, Texas Instruments TI-83, new, \$10; \$80; washer & dryer, Whirlpool, exc. cond., 2 yrs. old, \$300/ea; car seat for toddler, top quality, exc. cond., \$35. 241-8208, Irena, eva.

PIANO, Wurlitzer, w/bench, looks nice, etc. for student, \$85. 629-8455.

PING-PONG TABLE, \$90. 661/298-5404.

PRINTER, Epson LQ 1070+ wide carriage, dot matrix, extra ribbons & box of paper, \$15. 626/794-5277.

PRINTER, Hewlett-Packard, laser set HP w/cables and manuals, \$100. 626/794-5277.

RANGE, GEXL4, white w/black trim, sealed burners, hardly used, 957-2173.

RING, diamond, .51 total wt., velvet inner box & gift box, pd \$800, sell \$700/obo. 362-3348.

SNARE, lsa, red-tail, almost 1 year old, likes to be held, nice coloring, \$100. 952-8455.

SOFA, black, foam, folds out for bed, 66" wide, good cond., \$50; 3-drawer dresser, white, \$45; large whirlpool tub, \$50; dark oak rail-top desk, \$95. 14" plate glass, 64"x43", \$5. 249-6786.

SOFA & CHAIR, custom, beautiful designer 8' sofa, black leather back & sides, Navajo design cushion & pillows in black, maroon and tan, chair matching tan w/corner pillow, matching sofa, designed/built Oct. '97, exceptional qual., \$1,500/obo. 626/357-3230.

TOYS, Little Tikes; car, good cond., \$20; slide, exc. cond., \$40. 626/355-9733.

VEHICLES/Accessories

'96 BUICK LeSabre, loaded, custom, low 25,000 mi., leather interior, power seats, etc. 805/533-9443.

'95 CHEVROLET Camaro, dark green, tan int., V6, auto., AM/FM/CD, pwr. win/locks, keyless entry, new tires, brakes, exc. ABS, alloy rims, gd. cond., 60,000 mi., \$12,000/obo. 626/233-5888.

'66 CHEVROLET Corvette, .427 500 HP by Maloof, paint & body "Fleet color by Jesse", Mercedes Benz cloth top, exhaust custom 3" aluminumized by "Raphiel", too many extras, all prof. done, negot. start at \$55K. 661/268-1577.

'77 DATSUN 280Z, blue, 5 speed, new tires, batt., alt., & voltage regulator, rebuilt gear box, interior great, strong engine, smog ok, stereo, needs paint & fix new spider, \$2,400. 626/683-3140.

'79 FIAT Spider 2000 convertible, beige, 5 spd, new tires/paint, interior great, eng. perfect, smog ok, \$3,900. 626/683-3140, Gilles.

'96 HONDA Accord LX, blk ext./gray int., 59K miles, 4-dr., tinted rear windows, loaded, exc. cond., \$12,000/obo. 562/869-8010 or 626/454-0291.

'95 HONDA Acura Legend, LS Coupe, 2D, black, auto, 104,000 mi., mint cond., leather, sunroof, heated seats, alloy wheels, CD changer, remote keyless entry, \$22,000/obo. 626/568-8298.

'91 HONDA Civic DX, white 4D sedan, 62K miles, perfect cond., auto., AM/FM/tape, \$5,700/obo. 626/577-6638, Suzanne.

HUBCAPS, 3 for Cadillac, wire, chrome, \$25/ea. 626/798-7339.

'87 HYUNDAI Excel GLS, 5 spd., runs great, 99,000 mi., up-to-date registr., \$1,600/obo. 661/944-2448.

'55 METRO, gd. paint, body upholstery; nice running eng., \$3,000. 248-3640, lv. msg.

'93 NISSAN Quest XE, 7 passengers, auto, CD, AM/FM, orig. owner, 184,000 mi., exc. cond., \$5,900. 909/865-1049.

'98 PONTIAC Sunfire convertible, white, loaded, 7,400 mi., exc. cond., \$16,900/obo. 790-2123.

MANUALS, '86 Honda Accord, '70 Datsun 240Z, 952-8455.

'95 SATURN SL, 2, 4-dr. sedan, a/c, AM/FM/tape, cruise ctrl., 5-spd., exc. shape, low mi. (28K), \$8,400. 626/797-3310, evcs. & weekends.

SNOW CHAINS, 1 pair for 13" wheel size, \$25. 326-5233.

TIRES, 2, mounted w/rims, like new, P215/75B14. 790-2761.

'94 TOYOTA, 4-Runner 2WD, loaded, exc., must sell, \$16,750. 626/643-9769, Dave Trall.

'92 TOYOTA Camry LE, 4 cyl., alloy wheels, moonroof, 49,000 mi., \$6,900/obo. 248-3677.

'87 TOYOTA Cressida, 6 cyl., full pwr, cruise ctrl., auto. temp., stereo, tape deck, all new parts, plush int., tinted windows, light blue, 120K mi., great cond., total lux. car, great 2nd car, \$4,500/obo. 626/441-3542, Celia.

'74 VOLKSWAGEN Bug, good cond., hi-perform. 1800 eng., 26 mpg city, new tires, needs no work, \$2,800. 626/791-3797, Dennis McMurray.

'86 YAMAHA Venture Royale motorcycle, 38K mi., CB radio, cruise ctrl., AM/FM/ cass., driver to pass, comm. sys., exc. cond., looks new, \$3,900. 957-2852.

Wanted

CARPPOOLER, Rancho Cucamonga, Upland, Claremont, La Verne area, rd. reliable 3rd driver (preferably a Packers fan) to share commute, relax and enjoy carpool lane on 210, 7:00-3:45 (best for parking and traffic), leave Upland at 6:10, Claremont at 6:20, 909/981-7492, Jim or 909/824-7392, Eloy.

CLOCK, Westminster chime, mantle, circa 1940, 626/286-3705, Barbara.

COMPUTER hardware, tax deductible donation for private Jr./sr. high school. 626/963-1364.

GRADUATES, Belmont High School, L.A., '57-'62, 956-1744, Barbara.

HOST FAMILIES for Caltech intl. students for Thanksgiving Day, 626/395-6330, Tara Tram, taratram@caltech.edu.

MOTORCYCLE, 80 or 100cc, 805/582-1575.

PLAY EQUIPMENT, outdoor, for infant/toddler over 1 year old, 249-9093.

SNOWBOARD w/bindings, boots, gloves for child of about 5'4", tall, shoe size 3. 952-8455.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present. 790-8523, Marc Rayman.

TO RENT 2 bd., 2 ba. house with a/c and gar/ in N. SGV, nd. mid-Nov., will pay up to \$1,100/mo. 626/357-3230.

TOY, Inspector Gadget's Squirting Arm, McDonald's, 909/598-0065.

VANPOOL, 1/10, part-time riders in Sinal area, 626 hrs. 7:10-4:15, Ext. 4-4212, 371-6341.

VOLLEYBALL PLAYERS, coed, all levels of play, every Tues. nt., 8-10, Eagle Rock High School, 531mt, 956-1744, Barbara.

WET SUIT GEAR, hood & weight belt, men's mod.lg., possibly interested in other scuba items as well. 326-5233.

Lost & Found

JACKET, ladies crème color, silk, sz. 6 bus. suit, lost 10/6. 626/358-1434.

Free

COMPUTER, IBM PC XT w/keyboard and color monitor, gd. cond, 626/351-5485.

KITTENS, 2 adorable Siamese, to gd. home. 213/254-4652, Maggie.

For Rent

ALTADENA house, quiet neighborhood, 3 bd., 1 ba., new paint, very clean carpet, walk to JPL, -1.5 mi. to east gate, 950. 626/398-8109.

ALTADENA house, 2 bd., 1 bath, mttns/running home in San Gabriel Mtn. foothills, forest stream on land, view to forever, rustic, 5 miles/JPL, for unique individual or couple, \$750. 626/798-6886.

EAGLE ROCK, furn. rm in single-fam. house, nice area, 10 min./JPL, priv. entr. and ba., share kitchen/laundry privileges, \$350 incl. util. 323/256-1785.

GLENDALE, townhouse-style 2-story apt., c/a, 2 bd., 2.5 ba., blk-int, car, 575, old, 1054 Thompson Ave, S850, 1-yr. lease, 240-1523, mgr.

PASADENA, rm. in 3-bd. apt. to share w/2 others, pool, parking, a/c, washer/dryer, \$460 - 1/3 util. 626/654-1078.

PASADENA, share 2 bd., 2 ba. condo, all privileges, walk-in closet, laundry, parking, pool, Jacz., very quiet, walk to Caltech, PCC, South Lake, no smokes/drugs, have 2 cats, small pet ok, \$495. 626/577-2747, Kathy.

SIERRA MADRE apt., 2 bd., 1 ba., quiet 6-unit bldg, carport, \$750. 626/355-7318.

SOUTH PASADENA, fully furn. studio apt., nice area, 1718 Huntington Dr., bet. Marengo and Hill Sts, car space, laundry facil. on premises, utilities p/., non-smoker, no pets, \$565. 626/792-9053, Marilyn.

SYLMAR townhouse, exc. cond. 2 bd., 1-1/2 ba., fp, a/c, stove, dr., disposal, washer/dryer hookup, sec. alarm/gates, 2-car enclsr., 2 priv. patios, pool, Jacz., \$875. 248-4637.

Real Estate

EL MONTE condo, next to Arcadia border, 3 bd., 2 1/2 ba., loft, fp, c/a, a/c, patio, 2-car gar., high ceilings in Hr, borders Rio Hondo park, w/lg. lake, fishing, end unit, windows on 3 sides, by owner, \$123,500. 541-6632, Ken, evcs.

LA CANADA, 3 bd., 2 ba., lvg. rm, fp, fam. rm., newly redec. w/oak floors, newly re-landscaped, convenient to L.C. Elem. School, reduced to \$394K. 244-8253 - N.

NORTHBRIDGE, townhouse in gated community, 1,300 sq. ft., 2 bd./2.5 ba., 2-car att. garage, immac. unit, many upgrades, beautiful backyard, complex has pool, Jacz., tennis, 25 min./JPL, \$205,000, 360-5235.

PASADENA, 3-bd., 2.5-ba. townhome built '98, nr Rose Bowl, 3.5 mi/JPL, gated, 1,440 sq. ft. cent. heat/air, 2-car att. gar., pool, organized closets, tiled FP, alarm, ceiling fans w/lights in all bedr., covered balcony off the master, Pergo maple flrs, Corian counters, lg enclosed backyard fully landscaped w/water sprinklers, palm/fruit trees, pool/Jacz., basketball court, \$255,000/obo. 626/568-8298.

Vacation Rentals

BIG BEAR, cabin, quiet area nr. village, 2 bd., slps. 8, compl. furn., fp, TV/CP, \$75/nt. 249-8515.

BIG BEAR LAKE cabin, nr. lake, shops, vllage, forest trails, 2 bd., slps up to 6, fp, TV, VCR, phone, microwave, BBQ, JPL disc, from \$65/night, 909/599-5225.

BIG BEAR LAKEFRONT, luxury townhome, 2 decks, tennis, pool/spa, beautiful master bed suite, slps. 6, 949/786-6548.

CAMBRIDGE ocean front house, sleeps up to 4, exc. vw, 248-8853.

DAYTONA BEACH, for Y2K, priv. beach access, 1 bd., 2 ba., cable TV/VCR, FM stereo, full kitchen w/dishwasher & microwave, laundry w/d in rm, veranda

on private Jr./sr. high school. 626/963-1364.

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